APPLICATION OF IRON TO RAILWAY STRUCTURES.

In August, 1847, a royal commission was issued appointing Lord Wrottesley, the Rev. R. Willis, Captain James, Mr. George Rennie, Mr. William Cubitt, and Mr. Eaton Hodgkinson, Commissioners, and Lieutenant Douglas Galton, of the Royal Engineers, as secretary, to inquire into the effect of concussion and vibration upon the strength of cast-iron, and to examine the action of weights moving over bridges subject to deflection compared with the action of the same weights at rest. The sum of 3,000*l.* was put at their disposal for experiments. Long ago we laid before our readers the chief results of the inquiry in a notice of a lecture delivered by Mr. Willis, before the British Association, at Birmingham. The Report, which has since been printed, will be found to contain some useful information on a subject upon which in practice engineers at present are unable to apply principles with confidence. We looked, however, for more. The commissioners direct attention to the following general conclusions arrived at from the experiments made and the information collected by them in the course of the inquiry:—"That it appears advisable for engineers in contracting for castings to stipulate for iron to bear a certain weight, instead of endeavouring to procure a specified mixture. That to calculate the strength of a particular iron for large castings the bars used as a unit should be equal in thickness to the thickest part of the proposed casting. That, as it has been shown that to resist the effects of reiterated flexure, iron should scarcely be allowed to suffer a deflection equal to one-third of its ultimate deflection, and since the deflection produced by a given load is increased by the effects of percussion, it is advisable that the greatest load in railway bridges should in no case exceed *one-sixth of the weight which would break the beam when laid on at rest in the centre*. That, as it has appeared that the effect of velocity communicated to a load is to *increase the deflection that it would produce if set at rest upon the bridge*; also, that the dynamical increase in bridges of less than 40 feet in length is of sufficient importance to demand attention, and may even for lengths of 20 feet become more than one-half of the statical deflection at high velocities, but can be diminished by increasing the stiffness of the bridge; it is advisable that, for short bridges especially, the increased deflection should be calculated from the greatest load and highest velocity to which the bridge may be liable; and that a weight which would statically produce the same deflection should, in estimating the strength of the structure, be considered as the greatest load to which the bridge is subject. Lastly, the power of a beam to resist impact varies with the mass of the beam, the striking body being the same, and by increasing the *inertia* of the beam without adding to its strength, the power to resist impact is within certain limits also increased. Hence it follows that weight is an important consideration in structures exposed to concussions."

SCENERY AND DECORATION.

The Royal Princess's Theatre, Oxford-street.—We were not wrong when we said that particular attention would be paid by the new management of this theatre to the scenic arrangements: the two pieces that have been produced, namely, "Twelfth Night," and "Hamlet," fully bear us out. In the second, wherein Mr. Kean plays *Hamlet*, with very nice discrimination, an admirable congruence has been preserved. The artist has adopted the Romanesque style of architecture, and has not departed from it throughout. The exterior of the castle is a charming scene, with an excellent effect of extent and grandeur. For the Play scene, the old conventional arrangement has been abandoned: the mimic stage is formed by screening off a portion of the apartment with tapestry. For the burial scene we have a good exterior of a Romanesque church, slightly marred by a nondescript monument in the church-yard, on the left hand. All the architectural portions are painted with knowledge and a bold hand, and do great credit to the executants. Mr. W. Gordon and Mr. F. Lloyds are the artists attached to the theatre, but the scenery for this particular play has had the advantage of Mr. T. Grieve's superintendence. The scenery for "Twelfth Night" is also capitally painted, especially a view out of the duke's palace over a great extent of gardens and country, with archways and fountains, and a Proutish street scene, but is not so congruous. The gateway, for example, in first act, with mansion at back (capitally painted), does not belong to the country,—Illyria.

Her Majesty's Theatre.—Considerable changes are being made in the interior of Her Majesty's Theatre, to fit it for a series of promenade concerts. All the seats in the pit have been removed, and the partitions in all the tiers of boxes, with the exception of the grand tier. The promenade will remain on the level of the pit floor, and have a flight of steps on each side up to the level of the stage. The orchestra, to hold ninety musicians, will be partly on the stage, partly in the promenade. All the machinery, &c. over the stage has been removed to admit a tent-like covering, to form a grand saloon, which will be adorned with statues, &c. Mr. Johnson is the architect, and Mr. Wint the builder employed.

Decoration of Plymouth Theatre.—According to a correspondent (who states that the remarks which appear in our pages from time to time on scene-painting and decoration have given an impulse to theatrical artists all over the country which is producing good results), the theatre at Plymouth has been thoroughly redecorated by Mr. F. M. Johnson. The ground-work of the front of the boxes is white, upon which are introduced groupings of flowers and other devices. The lining of the interior is crimson. In the centre of the ceiling is a painting representing the "Hours leading out the Horses of the Sun." The pillars of the proscenium are rendered a dead white, the mouldings being gilt, and in place of the doors on either side, two niches have been formed, in each of which, standing upon a pedestal, is a white figure, one representing Ceres, and the other Flora. Immediately over these are two gilt designs of rail-work slightly projecting in front of the boxes; and in the centre of the sloped arch above, is a copy of Maclise's fresco from "Comus," which is in the Garden Pavilion of Buckingham Palace.

Miscellanea.

Railway Jottings.—In consequence of disputes about the occupation of the joint station at Chester, the London and North-Western directors have resolved to erect a new one for their own through traffic, the Chester and Holyhead and Chester and Birkenhead Companies to be invited in free of charge. Plans and estimates are being prepared.——The Worcester railway station, for temporary occupation, is nearly completed, and the branch line of rails to the city has been laid throughout.——The directors of the Chester and Holyhead are about to roof the tubes of the Britannia-bridge, with about 66,000 square feet of galvanized iron, or galvanized tinned-iron, in 3,640 sheets, corrugated and curved, each 5 feet 11 inches by 3 feet: 2,760 feet of galvanized spouting are also to be laid on.——The contracts for some portions of the Britton Ferry Dock works, at Neath, have been let, and will be immediately commenced.——The amount of locomotion in and out of London on Saturday and Monday last, by the railway excursion trains, says the *Times*, was of an unusual character. Nearly all the principal railways had an equipment of excursion trains. The Great Western had three special excursion trains, two out of and one into London. The latter left Bristol on Saturday at 7 o'clock, with 1,800 passengers, or about 1,000*l.*, for three days' excursion. All the excursions were carried out in good time and with perfect safety to the multitudes conveyed, and the heavy showers that fell on their arrival caused every available vehicle to be in immediate requisition.——Railways are making progress in New South Wales. The Sydney Company have complied with the deposit regulation, necessary to their legal existence and commencement of operations.——A correspondent complains, and he is only one of a dozen, that heavy goods have been detained from him at the London terminus of the South Eastern Railway for no less than eight days, and that the officials recommended him to send them by carrier when there was not sufficient to load a truck! They seem to forget that the railway authorities have run the carriers not only off the road, but off the rail itself.

State Encouragement of Art.—All eminently civilised states, from the Pharaohs or Semiramises to the present day, have devoted much attention to the public cultivation of the Arts. What should we now know of Egypt, but for its public monuments? How much glory have the Arts not added to Greece, notwithstanding its finished literature? How much glory have the Arts added to Great Britain?—We know what Greece did after the Persian war: its Arts seem to have raised it, as it were, by enchantment to an almost unapproachable grandeur: a single one of its public monuments, the Olympian Jupiter, was for many hundreds of years visited as one of the wonders of the world; and even now Elis, after *thousands* of years, is, we may almost say, the envied of the world for its achievement of this single work, a source of joy and wealth while it endured, and of glory for ever. Now let us turn to another picture; England, too, after its great war, determined to commemorate its victories likewise: this was done in the shape of some dozen marble monuments to its admirals, generals, and statesmen, in the churches of St. Peter and St. Paul; and the British public, who have already paid for the monuments, are allowed at certain times to look at them upon the payment of an additional few pence per head, to defray the expense of the showmen; a proceeding truly worthy of a great nation! Of all the penny-wisdoms and pound-follies of a state, there is no better illustration than the public treatment of Art in this country.—*Art-Journal.*

The Iron Trade.—The continued make of more iron than is now wanted has induced the Welsh manufacturers to propose to their rivals in Staffordshire a combination of the trade in these districts, as well as in the north, to reduce the unnecessary amount of the manufacture. The Staffordshire masters are holding their quarterly meetings again, and have resolved not to attempt to raise the present nominal prices; but, in fact, there is reason to believe that sales have been made at even lower prices than ever. As remarked by a Birmingham paper, any attempt in the meantime to raise prices would only tend still further to diminish the sale, at least in foreign markets. It is proposed to reduce the make by at least one-third. As for the poor operatives, it is clear that the sooner a number of them look out for some other sort of employment the better.——In allusion to a mode of supporting the Scottish iron trade, already noticed, we find it stated in a circular of Mr. Hu. Ferguson's, of Glasgow, that notwithstanding the bad principle and repute of iron scrip, business has been done on the old footing, at a trifling advance, and the price is now stated 42*s.* 6*d.* No. 1, and mixed Nos. cash f.o.b. The present stock of pigs, in yards and makers' hands, may be represented at about 180,000 tons, which will probably be increased by 30,000 tons at 31st December next. Thus the make has been much less in 1850 than 1849.

Stealing Bricks.—A case at Wandsworth is at present exciting no little interest. Messrs. Locke and Nesham, the contractors for the new prison, have had upwards of 100,000 bricks, out of 5,000,000 consigned to them, stolen while on their way to the prison. Many of the stolen bricks have been traced, it is said, into the hands of persons ranking as respectable people, and W. R. Coomber, a builder, residing at Bridge-road, Battersea, William Goddard, John Savage, and Charles Onley have been examined, the three latter on a charge of being concerned in stealing them, and the first-named on a charge of knowingly and feloniously receiving a large quantity of the bricks stolen. In the course of the examination it was stated by Mr. Jewell, the foreman at the prison, that the value or cost of the bricks was 26*s.* a thousand, and the drawing, &c., 5*s.* They were supplied by Mr. Everest, of Rochester, through Mr. Pilton, of Kensington, his agent, and were stock bricks of the best sort. The parties were remanded—Coomber on bail.

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